

## The Marine Mollusca of Christmas Island, Indian Ocean.

By J. R. LE B. TOMLIN

A collection of marine Mollusca, made by Mr. M. W. F. Tweedie, Assistant Curator of the Raffles Museum, in August and September 1932, was sent to me for identification. This collection, numbering rather over 100 species, combined with others made in the past, gives us, for the first time, an adequate idea of the marine Mollusca to be found on the Christmas Island littoral. Including some half dozen species from deep water the total now reaches about 170, with fairly equal relationships to the areas on either side. Owing to the Equatorial Current there are probably very few items on the Christmas Island list which do not occur on one or other of the Mascarene Islands. The connection with the Pacific side is particularly emphasized by the occurrence of several small gastropods which seem mainly characteristic of the Pacific area—say, roughly, from the Philippines to Hawaii on the east, and to the Paumotu in the south-east. Such are *Rissoina ambigua*, *R. triticea* and *R. turricula*, *Royella sinon*, *Cerithium zebrum* and *C. egenum*, *Triphora rubra* and *T. violacea*, and several *Engina*. There are not a few others which will eventually prove to belong to this group, when material from a number of localities is available.

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<sup>1</sup>. Echinoderm Fauna of Torres Straits, Carnegie Inst., Washington, 1921, p. 59.

THE MARINE MOLLUSCA OF CHRISTMAS ISLAND

I have followed the systematic order of Thiele's *Handbuch*.  
The letters A to F refer to the Bibliography.

CHITONIDAE

*Onithochiton quercinus* (Gld.) var. *scholviemi* Thiele.

Identified by J. S. Mackay. The typical form comes  
from New South Wales.

HALIOTIDAE

*Haliotis* sp. juv. D, E.

FISSURELLIDAE

*Diodora singaporensis* (Reeve). D, E. Not taken by  
Tweedie.

PATELLIDAE

*Cellana profunda* (Deshayes). Known from the Mascarene  
Islands and the East African coast.

TROCHIDAE

*Trochus* (*Cardinalia*) *virgatus* Gmelin. Recorded from the  
Red Sea to Japan.

T. (*Rochia*) *niloticus* L. D, E.

TURBINIDAE

*Leptothyra filifera* (Deshayes). Another Mascarene species.

*Turbo petholatus* L. A common oriental species.

T. (*Senectus*) *lajonkairii* Deshayes. A, E, E. Not a  
common shell: taken also by Tweedie. Recorded from  
Keeling Islands and from the "East Indies".

*Astraea petrosa* (Wood). A common Pacific species:  
doubtful in the Indian Ocean.

NERITIDAE

*Nerita albicilla* L.

N. *costata* Gmelin. B, E.

N. *plicata* L. A.

N. *polita* L. E.

These four common Indo-Pacific species were all taken  
alive by Tweedie.

N. *maxima* Gmelin. A. A not very common Pacific  
species, taken also by Tweedie.

N. *grossa* L. E.

N. *georgina* Récluz. Described from King George Islands.  
I have not seen any other locality mentioned.

N. *pica* Gould. Widely distributed in Japan and Polynesia.

## NERITOPSIDAE

*Neritopsis radula* (L.). An Indo-Pacific species.

## PHENACOLEPADIDAE

*Phenacolepas elongata* (A. Adams). I am doubtful whether this has ever been described, though examples are to be found so named in the British Museum. I have also one found by Miss McKinnon Wood at Mombasa.

## LITTORINIDAE

*Littorina undulata* Gray. A. A very wide-spread Indo-Pacific species. Smith records it as *picta* Phil.

*L. granocostata* Reeve. A. Occurs throughout the Indian Ocean. Smith curiously enough described this as *granocostata* in A. p. 519 and altered it to *insularis* in P.Z.S. 1888 p. 536, on account of the priority of Reeve's name, but he never seems to have examined Reeve's types or to have discovered that *granocostata* and *granocostata* were identical species.

*Tectarius malaccanus* (Phil.). A. Both this and the last two taken alive by Tweedie.

## RISSEOIDAE

*Amphithalamus (Anxietas) perplexus* (Iredale). F. From 100 fathoms.

*Zebina lis* Tomlin. Found in shingle: described from Lifu and from Oshuma.

*Rissoina ambigua* Gould.

*R. triticea* Pease.

*R. turricula* Pease.

All three are widely distributed in the Pacific, and sometimes extremely abundant in beach shingle.

## ADEORIDAE

*Sansonia sansonia* Jousseaume. F.

*S. kirkpatricki* (Iredale). F.

*S. (Reynellona) natalis* (Iredale). F.

All three from 100 fathoms. I have followed Bayay as regards the names of the first two: his very careful account of the genera *Sansonia* Jousseaume, *Mecolothia* Hedley and *Pickworthia* Iredale will be found in Journ. de Conch. LXVI, pp. 155-161. Thiele omits *Sansonia* from his *Handbuch* altogether and uses Hedley's name. The genotype of *Sansonia* must of course be *Iphtus tuberculatus* Watson, as it is the only example of *Sansonia* which Jousseaume cites by name. *Pickworthia* hardly seems wanted even as a section.

## PLANAXIDAE

*Planaxis niger* Q. & G. A Pacific species.

*P. longispira* Smith. D. Found also by Tweedie. Under the name of *virgatus* Smith recorded in great profusion at Lifu (Journ. of Conch. VIII, 117). I have examined Smith's types of these two species and cannot find any distinction between them, except that they exhibit slightly different stages of wear and tear. Compare Smith's remark in D, p. 372.

## POTAMIDIDAE

*Royella sinon* (Bayle). For notes on this shell see Proc. Malac. Soc. X, 219.

## CERITHIIDAE

*Bittium glareosum* (Gould).

*B. hiloense* Pilsbry and Vanatta.

These two Pacific species were found in shingle. The latter has been compared with topotypes from Hilo and is absolutely identical.

*Cerithium echinatum* Lamarek.

*C. piperitum* Sowerby.

*C. nesioticum* Pilsbry.

*C. egenum* Gould.

These are all four Pacific species with a wide range.

*C. citrinum* Sowerby. Mainly a Philippine species.

*C. zebrum* Kiener. D, E. A widespread and abundant Pacific shell with many named colour varieties. Tweedie found it in shingle.

*Plesiotrochus fischeri* Smith. D, E. This rare form was also found by Tweedie. Only known from Christmas Island.

## CERITHIOPSIDAE

*Cerithiopsis catenaria* Melvill and Standen. One small shell I refer rather doubtfully to this species, only known so far from Lifu.

## TRIPHORIDAE

*Triphora rubra* (Hinds).

*T. violacea* (Q. & G.).

Both found in shingle: widely distributed in the Pacific.

*T. triticea* Pease. D, E. Figured by Smith. The type, which is in the British Museum, came from Hawaii.

## MELANELLIDAE

*Balcis vitrea* (A. Adams). A Pacific species.

## SHERBORNIDAE

*Sherbornia mirabilis* Iredale. F. From 100 fathoms.

## AMALTHEIDAE

- Choites diaphana* (Reeve). *D, E.* Probably a synonym of *C. equestris* (L.).  
*Amalthea australis* (Deshayes). *D, E.* A common Pacific species.

## STROMBIDAE

- Strombus lentiginosus* L. Common in the Indo-Pacific.

## NATICIDAE

- Natica areolata* Récluz. Also an Indo-Pacific species.

## CYPRAEIDAE

- Pustularia childreni* (Gray). An interesting and rather uncommon Cowry.  
*P. cicereula* (L.). Common and very widely spread in the Indo-Pacific.  
*Cypraea helvola* L.  
*C. mauritiana* L. *E.*  
*C. vitellus* L. *B, E.*  
*C. lynx* L. *B, E.*  
*C. poraria* L. *D, E.*  
*C. histrio* Dillwyn. *E.*  
*C. arabica* L. *B, E.*; var. *gillei* Jousseaume. *E.*  
*C. caput-serpentis* L.  
*C. moneta* L. *B, E.*  
*C. annulus* L. *B, E.*  
*C. minoridens* Melvill.  
 These are all more or less common Cowries of very wide range in the Indo-Pacific.

## CASSIDIDAE

- Phalium vibex* (L.). Also Indo-Pacific.

## CYMATIDAE

- Cymatium chlorostoma* (Lam.). *A.* Ranges from the Cape Verde Isles round S. Africa to the Red Sea, and over most of the Indo-Pacific.  
*Colubraria ceylonensis* (Sow.).

## BURSIDAE

- Bursa tuberculata* (Brod.).  
 Both this and the last are Indo-Pacific species.  
*B. cruentata* (Sow.). *A.* Recorded from Mauritius to the Philippines.

## MURICIDAE

- Murex* (*Chicoreus*) *microphyllus* Lam. An Indian Ocean shell.  
*M. (Naquetia) triquetra* Born. Known from the Red Sea eastwards to the Paumotu.

- Drupa ricinus* (L.). *A, B.*  
*D. rubus-idaeus* Röding. *E.*  
*D. morum* Röding. *E.*  
*D. uva* Röding. *B, D, E.*

All four are well known Pacific forms.

- D. andrewsi* Smith. *D, E.* Peculiar to Christmas Island.  
 All these species of *Drupa* were taken living by Tweedie.  
*D. martensi* Dall? Two small, worn and somewhat doubtful specimens. It occurs not uncommonly in shingle from the Philippines but I have never seen it fresh.

*Maculotriton bracteatus* (Hinds).

*M. digitalis* (Reeve). These two have a very wide range throughout the Indo-Pacific.

*Nassa sertum* (Bruguière). *B.* Taken also by Tweedie. Ranges from the Red Sea to the Paumotu.

*Thais armigera* (Lam.). *E.* Taken alive by Tweedie. Pretty common in the Philippines.

*T. pseudohippocastanum* Dautz. For the change of name (from the more familiar *hippocastanum*) see Faune des Colonies Françaises vol. III, p. 427, 1929. The species occurs generally throughout the Indo-Pacific.

## MAGILIDAE

*Coralliophila violacea* (Kiener). *D, E.* Taken also by Tweedie. An Indo-Pacific species.

## PYRENIDAE

- Pyrene obtusa* (Sow.). A Pacific species, ranging eastwards from the Philippines.  
*P. cumingii* (Reeve). Recorded hitherto from Mauritius and the Philippines.  
*P. varians* (Sowerby). *D, E.* Smith records a variety of this: not found by Tweedie.  
*Seminella nanisca* (Hervier).  
*S. hervieri* (Pace)?

Both so far only known from Lifu. I have recently detected *nanisca* in shingle from Cabra Island.

## BUCCINIDAE

- Engina nodicostata* Pease. Recorded only from Fiji and one or two other Pacific groups.  
*E. lineata* (Reeve).  
*E. melanozona* Tomlin.  
 Both common in the Philippines and eastwards.  
*E. purpureocincta* Preston. Living specimens: described from Ceylon.

*E. mendicaria* (L.). A, B, E. Taken living by Tweedie. Thiele in his *Handbuch* considers *Pusiosoma*, which was erected for this species by Swainson, a mere synonym of *Engina*.

*Pisania crenilabrum* A. Adams. Taken living.

*Caducifer sculptilis* (Reeve).

*C. eximius* (Reeve). Neither very common but known from the Mascarenes to Polynesia.

*Pollia undosa* (L.). B, D, E. Taken living by Tweedie. An Indo-Pacific species.

*P. marmorata* (Reeve).

*P. gracilis* (Reeve).

Both Pacific forms.

## NASSARIIDAE

*Nassarius papillosus* (L.). D, E. Philippines and Polynesia.

*N. concinnus* (Powis). Common in Mauritius, the Philippines and Lifu.

*N. pauper* (Gould). A Pacific species, difficult to identify satisfactorily, but certainly very widely distributed.

*N. marratii* (Smith). E. Taken also by Tweedie. Smith's unique *Nassa exulata* is a rather worn and bleached *marratii*, which was described from the Solomon Is.

## FASCIOLARIIDAE

*Latirus nodatus* (Gmelin). E. Taken also by Tweedie. A Pacific species.

*L. turritus* (Gmelin). Mascarene Is. to Polynesia.

*Peristernia venusta* Smith. E. Of this new species one only was dredged in Flying Fish Cove in 45 fathoms.

*P. nassatula* (Lam.). D, E. Taken alive by Tweedie. Red Sea, Mascarenes and Seychelles to the Paumotu.

*Leucozonia smaragdula* (L.). B, E. Taken by Tweedie. Mauritius and Madagascar to the Pacific.

## OLIVIDAE

*Oliva paxillus* Reeve. Known from the Philippines, Japan and some of the Pacific islands.

## MITRIDAE

*Mitra* (*Strigatella*) *litterata* Lam. B, E.

*M. (S.) paupercula* (L.). B, E.

*M. (S.) retusa* Lam. D, E.

These three were all taken living by Tweedie.

*M. (S.) virgata* Reeve. A. What this *Mitra* was it is hard to say. Reeve's *virgata*, in the *Conch. Icon. Monograph*, Vol. II, pl. 25, f. 197a, b was a composite species—f. 197a being in all probability *retusa* Lam. and 197b *paupercula* L. Moreover, in any case, the name *virgata* is preoccupied by Gmelin's *Voluta virgata*, which is also a *Mitra*. In B. p. 117 Smith speaks of "a short form like *virgata* Reeve (f. 197b) with spire transversely grooved and the white stripes on body whorl somewhat raised forming feeble costulations". This he calls *paupercula* var., but he makes no reference to the shell recorded as *virgata* in 1887. It would be best to omit *virgata* from the list.

*M. (Chrysame) fulva* Swainson. E.

*M. (C.) tiarella* A. Adams.

Both fairly common species from Mauritius to the Pacific.

*M. (C.) turgida* Reeve. Not very common in the Philippines and Polynesia.

*M. (Callicthea) aureolata* Reeve. Ranges from Mauritius to the Pacific.

*M. (Pusia) nodosa* Reeve. Mauritius to the Philippines.

*M. (Dibaphus) edentula* Swainson. Mauritius to the Pacific.

*M. (Thala) brevicula* Souverbie. Known only from New Caledonia.

## VASIDAE

*Vasum ceramicum* (L.). A common Pacific species.

## MARGINELLIDAE

*Marginella hirasei* Bavay. Described from Japan: I have recently found it fairly common in shingle from Cabra Island.

## CONIDAE

*Drillia pulchella* (Reeve).

*D. bijubata* (Reeve).

*D. pica* (Reeve).

*Cythara gracilis* (Reeve). These four Turrids are all known from Mauritius and from the Pacific.

*Anarithma metula* (Hinds). For a long note on the history and range of this shell see *Proc. Malac. Soc. London*, Vol. X, p. 27.

*Pseudoraphitoma nexa* (Reeve).

*P. lutea* (Pease).

*P. papillosa* (Garrett).

All three are known chiefly from the New Caledonia area.

*Conus ebraeus* L. *E, D, E.* var. *vermiculatus* Lam. *D, E*

*C. coronatus* Gmelin. *B, E.*

*C. miles* L.

*C. catus* Brug.

*C. rattus* Brug.

These Cones are all generally distributed species of the Indo-Pacific.

#### TEREBRIDAE

*Terebra crenulata* (L.) *B.*

*T. undulata* Gray. *E.*

Two fairly common Indo-Pacific species, not found by Tweedie.

*T. interlineata* Deshayes. Sometimes considered a Pacific variety of *crenulata* L.

#### ATYIDAE

*Smaragdinella viridis* (Rang). *B, D, E.*

#### CORAMIDAE

*Doris coriacea* Abraham. *B.*

#### PHYLLIDIIDAE

*Phyllidia varicosa* (Lam.). *B.*

#### ONCIDIIDAE

*Peronia peronii* Fleming. *B.*

#### SIPHONARIIDAE

*Siphonaria ferruginea* Reeve. *D, E.*

Described from an unknown locality.

#### ARCIDAE

*Barbatia decussata* (Sowerby). *E.*

Has a very wide range in the Indo-Pacific.

*B. maculata* (Sowerby). *D, E.*

Probably Smith's *Arca imbricata* in his 1900 list is the same thing. In those of 1909 and 1911 he only records *maculata*, and probably changed his mind as to the identification of the species. There is much doubt as to whether the name *imbricata* Brug. should be applied to an oriental or an occidental form.

#### MYTILIDAE

*Septifer bilocularis* (L.). *B, D, E.*

Very common in the Indo-Pacific. I am quite unable to separate *S. excisus* (Wiegmann) from *bilocularis*.

#### THE MARINE MOLLUSCA OF CHRISTMAS ISLAND

*Lithophaga lithura* Pilsbry.

So far only known from Japan.

*Brachidontes rufolineatus* Smith.

Described from Christmas Island, not found by Tweedie.

#### VULSELLIDAE

*Isognomon perna* (L.).

Probably occurs throughout the Indo-Pacific. Baird described it as new under the name *samoënsis* from the cruise of the "Curacao."

*I. legumen* (Gmelin).

*I. dentifera* (Krauss).

Both Indian Ocean species whose range is imperfectly known.

*Pinetada vulgaris* (Schumacher).

This species is very fully discussed by Jameson in Proc. Zool. Soc. London, 1901, p. 384.

#### PECTINIDAE

*Chlamys weberi* Bavay.

A Japanese species.

*Spondylus hystrix* Röding.

*S. pesasinitum* Röding.

Both known from Mauritius to the Philippines.

#### OSTREIDAE

*Ostrea cucullata* Born.

Universally distributed in the Indian Ocean.

#### CARDITIDAE

*Mytilicardia variegata* (Brug.).

A common Indo-Pacific species.

#### TRAPEZIDAE

*Trapezium oblongum* (L.). *D, E.*

Tweedie only took the next species; both are widely distributed in the Indian Ocean, and very probably in the Pacific as well.

*T. angulatum* (Lam.).

#### LUCINIDAE

*Codakia divergens* (Phil.).

Range probably Indo-Pacific.

#### CHAMIDAE

*Chama brassica* Reeve.

A common Indian Ocean shell.

CARDIIDAE

*Cardium* (*Trachycardium*) *philippinense* Deshayes.

Only known from the Philippines.

*C. (Pragum) rubescens* Smith. *E.*

Only known from Christmas Island; dredged in 30 fathoms.

TRIDACNIDAE

*Tridacna gigas* (L.). *E, E.*

Very young specimens. Tweedie only found the next species.

*T. compressa* Reeve.

This may be Smith's *Tridacna* sp. of the 1909 list.

VENERIDAE

*Antigona reticulata* (L.).

SEMELEIDAE

*Semele* sp.

TELLINIDAE

*Tellina* (*Arcopagia*) *scobinata* L. *E.*

Taken also by Tweedie. Known from Mauritius to the Philippines.

PHOLADIDAE

*Xylotrya*, two spp. *D, E.*

TEREDINIDAE

*Teredo* sp. *D, E.*

OMMASTREPHIDAE

*Ommastrephes* sp. *E.*

OCTOPODIDAE

*Octopus rugosus* Bose. *D, E.*

Recorded by Smith as *Polypus granulatus* Lam.

Possibly the *Octopus* sp. of the 1900 list was also this.

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